

SYSTEM AND METHOD FOR CALIBRATING A SPATIAL LIGHT MODULATOR

ABSTRACT OF THE DISCLOSURE

A method and system as used to calibrate a reflective SLM. The system can include a reflective SLM having an array of pixels (e.g., moving, tilting, rotating, pivoting, etc. pixels) and a projection optical system resolving individual pixels and having an apodized pupil. During a calibration operation, the pixels of the SLM receive varying voltage values to either continuously or incrementally move them through various angles. Light reflecting from each of the pixels during these movements forms individual images for each pixel at each angle. The light passes through the apodized pupil and is received on one or more sections (e.g., pixels) of a detector (e.g., a CCD array). The pupil apodization pattern is selected so that individual pixels remain well resolved and their resolved images have strong sensitivity to the pixel mirror tilt. The light intensity received for each pixel at each angle is correlated to the voltage value received at the pixel to tilt the pixel to that angle. The correlation produces a result signal. The result signal is used by a control device before and during normal operation of the SLM to calibrate the SLM one or more times.

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